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RESEARCH NOTE

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CHARACTER OF THE 1940 FIRE SEASON IN REGION ONE

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Although the character of the 1940 fire season differed considerably in various parts of northern Idaho and western Montana, and although the season was of only average length, the record-breaking number of lightning fires which afflicted all parts of the region, whether the inflammability was moderate or high, produced a critical situation which justifies the rating of critical for the season and region.

Beginning with a dry November 1939, and minimized only by a wet April 1940, the forests of the region were thoroughly conditioned for a bad fire season even before June 1940, which turned out to be the driest June since catastrophic 1919. While grasses, weeds, and shrubs were characteristically green in appearance in June 1940, the behavior of many fires burning "slick and clean" and spotting long distances ahead proved both the imminence of high danger and the fallacy of depending upon the appearance of vegetation as a major criterion of fire danger. By early July practically all forests were reporting danger ratings equal to or above average for that time of year.

July brought the apparently anomalous condition of frequent and often heavy rains, yet a record-breaking number of fires caused by lightning. In extreme northern Idaho and northwestern Montana, and in the Salmon River and Bitterroot Valleys, these rains were lighter and more spotted than elsewhere but the lightning storms were of almost equal intensity and continuity. The result was an organization-taxing load of fires that introduced a new factor into danger rating by changing a

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previous constant into a major variable. This occurred when the previous percentage of lightning fires, generally a constant at 70 to 75 percent, became 86 percent for the month of July 1940, and then maintained this ratio for the rest of the season. As the total number of lightning fires amounted to 3,114 for the season on an area ordinarily subjected to only 1,400 or 1,500 from all causes, it is obvious that any seasonal rating schemes ignoring such a radical departure could not be truly indicative. Past ratings have considered the occurrence or nonoccurrence of lightning storms but have been based on an assumption, previously valid, that the number of fires would otherwise vary quite closely with fuel moisture and wind. This was not the case in 1940.

From the standpoint of inflammability alone, July was only average to moderately bad. On the Clearwater and St. Joe Forests, and in a narrowing wedge extending to the northeast as far as Kalispell, the amount and frequency of rains were, in fact, definitely better than usual. Everywhere, however, the almost continuous lightning storms from July 12 to 26 produced a number of fires far exceeding anything ever before experienced, and, likewise, exceeding anything ever planned for. Forest protective organizations, private, State, and Federal, were confronted with the task of meeting in 3 weeks the normal "business" of a full year. Practically all organizations rose to this emergency and met it successfully. This was fortunate, because, as evidenced by results north of the Canadian Boundary Line, those July fires which escaped early control exploded repeatedly when aided by an almost rainless August and then burned to large acreages.

As shown by Weather Bureau records, 8 out of 26 stations in northern Idaho received a total of less than 0.01 inch rain during the entire month of August. Only two stations in western Montana and none in northern Idaho received more than half an inch in that month. Fortunately, again, there was very little lightning in August, and wind velocities were generally below normal. The fire season was ended by general rains September 12 to 15, which is about usual.

Due to several factors, the danger ratings by forests expressed in percentage of worst probable danger, which have been published for the last several years, are not given for 1940. These numerical ratings were intended to aid in comparing fire danger between forests each year and on any one forest from year to year. Such comparisons, to be valid, require absolute consistency (1) in measuring each of the selected factors of danger, and (2) in combining these several factor measurements into a daily and then seasonal danger rating. The entire system has been recognized as experimental and improvements have been made from time to time. Each of the several changes that have been made from time to time has, of course, slightly impaired comparability with previous ratings. The sum of all these, plus the major change made in 1940, of discontinuing the use of duff hygrometers and placing sole dependence for fuel moisture measurement on the use of wood cylinders, is now believed to have destroyed reasonable comparability with the early years. The usual tabulation of "percentage of worst probable" is therefore omitted from this report.

These annual ratings of the character of the past fire season have been experimental or developmental in one other respect. When initiated in the January 1935 issue of Applied Forestry Notes, the predecessor of the present Research Notes, these annual summaries were intended as a test to determine whether or not such annual ratings would be useful to the several forest protective agencies, private, State, and Federal, in this region. Very few comments have ever been received to furnish a basis for deciding whether or not they have served this purpose. Of all private and State agencies only the Diamond Match Company and one high officer of the Weyerhauser Timber Company have ever expressed interest. The National Park Service and the Forest Service are the only agencies known to have used these annual summaries. If the Northern Rocky Mountain Forest and Range Experiment Station is to serve all forest protective agencies to the fullest possible extent, it will be helpful to receive criticisms and suggestions from all interested agencies concerning these annual summaries. Such comments should be addressed to the Director, Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Montana.